

01-10-00

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Attorney Docket No. STI 102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION TRANSMITTAL LETTER

Transmitted herewith for filing is the patent application of:

1. Inventor(s): Ming-Shiang SHEN

Title: Electronic Data Storage Medium With  
Fingerprint Verification Capability

Name of applicant(s) and current correspondence address of  
applicant(s)

Name: Ming-Shiang SHEN  
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Dist., Taipei City, Taiwan

Enclosed are:

<u>X</u>	<u>1</u>	Sheets of Drawings
	<u>X</u>	Formal
		Informal
		Assignment of invention to _____
<u>X</u>	<u>7</u>	Pages of Specification
<u>X</u>	<u>4</u>	Pages of Claims
<u>X</u>		Abstract of Disclosure
<u>X</u>		Statement of Small Entity
<u>X</u>		Declaration and Power of Attorney
		Information Disclosure Statement
		Appointment of Associate Attorneys

01/06/00  
Jc525 U.S. PTO

Jc530 U.S. PTO  
09/478720  
01/06/00

09478720-010500

Applicants claim priority under 35 USC §119 to the following foreign application:

Serial no. 88217720 filed October 19, 1999 in Taiwan.

\_\_\_\_\_ A certified copy of this priority document is enclosed herewith.

Claims as Filed


	Number Filed		Number Extra	Rate	Fee
Total	11	-20	0	(small entity) x 9 (others) x 18	\$0.00
Independent	1	-3	0	(small entity) x 39 (others) x 78	\$0.00
Multiple Dependent	0			(small entity) x 130 (others) x 260	\$0.00
Basic Fee				(small entity) x 345 (others) x 690	\$345.00
Assignment					\$
Total Fee					\$345.00

\_\_\_\_\_ Please charge my Deposit Account No. 50/1039 in the amount of \$ \_\_\_\_\_. A duplicate copy of this sheet is enclosed.

  X   The Commissioner is hereby authorized to charge any additional fees (except the issue fee) which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment to Deposit Account No. 50/1039. A duplicate copy of this sheet is enclosed.

  X   A check in the amount of \$ 345.00 is enclosed to cover the filing fee and the recordation of the Assignment, if any, transmitted herewith.

Date: January 4, 2000

  
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Name Cristine M. Noll  
(typed or printed)

Signature Cristine M. Noll

Applicant or Patentee: Ming-Shiang SHEN Attorney's  
Serial or Patent No.: \_\_\_\_\_ Docket No.: \_\_\_\_\_  
Filed or Issued: \_\_\_\_\_  
For: ELECTRONIC DATA STORAGE MEDIUM WITH FINGERPRINT VERIFICATION CAPABILITY

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9 (f) and 1.27 (b)) — INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9 (c) for purposes of paying reduced fees under section 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled ELECTRONIC DATA STORAGE MEDIUM WITH  
described in FINGERPRINT VERIFICATION CAPABILITY

☒ the specification filed herewith  
☐ application serial no. \_\_\_\_\_, filed \_\_\_\_\_  
☐ patent no. \_\_\_\_\_, issued \_\_\_\_\_

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☒ no such person, concern, or organization  
☐ persons, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent; notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28 (b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Ming-Shiang SHEN

NAME OF INVENTOR NAME OF INVENTOR NAME OF INVENTOR

Signature of Inventor

Signature of Inventor

Signature of Inventor

Dec. 24, 1999

Date

Date

Date

Date of Deposit January 6, 2000

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**ELECTRONIC DATA STORAGE MEDIUM WITH  
FINGERPRINT VERIFICATION CAPABILITY**

**BACKGROUND OF THE INVENTION**

Name Cristine M. Noll  
(typed or printed)

**1. Field of the Invention**

Signature Cristine M. Noll

5 The invention relates to an electronic data storage medium, more particularly to an electronic data storage medium with a fingerprint verification capability.

**2. Description of the Related Art**

At present, confidential data files are stored in  
10 floppy disks or are delivered via networks that require passwords or that use encryption coding for security. Confidential documents can be sent by adding safety seals and impressions during delivering. However, the  
15 aforesaid are exposed to the risks of breaking of the passwords, encryption codes, safety seals and impressions, thereby resulting in unsecure transfer of information.

**SUMMARY OF THE INVENTION**

Therefore, the object of the present invention is  
20 to provide an electronic data storage medium with a fingerprint verification capability for security during the transfer of information.

According to the present invention, an electronic data storage medium is adapted to be accessed by a data  
25 terminal. The electronic data storage medium includes a memory device, a fingerprint sensor, an input-output interface circuit and a processing unit.

The memory device stores a data file and fingerprint reference data obtained by scanning a fingerprint of a person authorized to access the data file.

5 The fingerprint sensor is adapted to scan a fingerprint of a user of the electronic data storage medium and to generate fingerprint scan data.

The input/output interface circuit is activable so as to establish communication with the data terminal.

10 The processing unit is connected to the memory device, the fingerprint sensor and the input/output interface circuit. The processing unit is operable selectively in

15 a programming mode, where the processing unit activates the input/output interface circuit to receive the data file and the fingerprint reference data from the data terminal, and to store the data file and the fingerprint reference data in the memory device, and

20 a data retrieving mode, where the processing unit receives the fingerprint scan data from the fingerprint sensor, compares the fingerprint scan data with the fingerprint reference data in the memory device to verify if the user of the electronic data storage medium is authorized to access the data file stored in the  
25 memory device, and activates the input/output interface circuit to transmit the data file to the data terminal upon verifying that the user of the electronic

data storage medium is authorized to access the data file stored in the memory device.

#### **BRIEF DESCRIPTION OF THE DRAWING**

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment with reference to the accompanying drawings, of which:

Figure 1 is a schematic circuit block diagram illustrating the preferred embodiment of an electronic data storage medium according to the present invention.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to Figure 1, according to the preferred embodiment of the present invention, an electronic data storage medium is adapted to be accessed by an external computer 9, and is shown to include a card body 1, a processing unit 2, a memory device 3, a fingerprint sensor 4, an input/output interface circuit 5, a display unit 6, a power source 7, and a function key set 8.

The memory device 3, such as a flash memory device, is mounted on the card body 1, and stores a data file, a reference password, and fingerprint reference data obtained by scanning a fingerprint of a person authorized to access the data file in a known manner therein. The data file can be a picture file or a text file.

The fingerprint sensor 4 is mounted on the card body

1, and is adapted to scan a fingerprint of a user of the electronic data storage medium and to generate fingerprint scan data. One example of the fingerprint sensor 4 that can be used in the present invention is that disclosed in a co-pending U.S. patent application, entitled "INTEGRATED CIRCUIT CARD WITH FINGERPRINT VERIFICATION CAPABILITY ", filed by the applicant of this application, the entire disclosure of which is incorporated herein by reference.

10 The input/output interface circuit 5, such as a PCMCIA or RS232 interface, is mounted on the card body 1, and is activable so as to establish communication with the external computer 9.

15 The processing unit 2 is mounted on the card body 1, and is connected to the memory device 3, the fingerprint sensor 4 and the input/output interface circuit 5. The processing unit 2 is operable selectively in:

20 a programming mode, where the processing unit 2 activates the input/output interface circuit 5 to receive the data file and the fingerprint reference data from the external computer 9, and to store the data file and the fingerprint reference data in the memory device 3 in a compressed format to increase storage capacity of the memory device 3;

25 a data retrieving mode, where the processing unit 2 receives the fingerprint scan data from the

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fingerprint sensor 4, compares the fingerprint scan data with at least a segment of the fingerprint reference data in the memory device 3 to verify if the user of the electronic data storage medium is authorized to access the data file stored in the memory device 3, and activates the input/output interface circuit 5 to transmit the data file to the external computer 9 upon verifying that the user of the electronic data storage medium is authorized to access the data file stored in the memory device 3; and

a data resetting mode, where the data file and the finger reference data are erased from the memory device 3.

The power source 7 is mounted on the card body 1, and is connected to the processing unit 2 for supplying electrical power thereto.

The function key set 8, which is mounted on the card body 1, is connected to the processing unit 2, and is operable so as to initiate operation of the processing unit 2 in a selected one of the programming, data retrieving and data resetting modes. The function key set 8 is operable to provide an input password to the processing unit 2. The processing unit 2 compares the input password with the reference password in the memory device 3, and initiates operation in the data resetting mode upon verifying that the input password corresponds with the reference password.

The display unit 6 is mounted on the card body 1, and is connected to and controlled by the processing unit 2 for showing the data file exchanged with the external computer 9 and the operating status of the electronic data storage medium thereon.

Preferably, the processing unit 2 automatically initiates operation in the data resetting mode upon detecting that a preset time period has elapsed since storage of the data file and the fingerprint reference data in the memory device 3.

The following are some of the advantages of the present invention:

1. The electronic data storage medium has a small volume but a large storage capability in a compressed format, thereby resulting in convenience during data transfer.

2. Since everyone has a fingerprint different from that of the others, the electronic data storage medium only permits authorized persons to access the data files stored therein, thereby resulting in enhanced security.

While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit and scope of the broadest

interpretation so as to encompass all such  
modifications and equivalent arrangements.

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**I CLAIM:**

1. An electronic data storage medium adapted to be accessed by a data terminal, said electronic data storage medium comprising:

5 a memory device for storing a data file and fingerprint reference data obtained by scanning a fingerprint of a person authorized to access the data file;

10 a fingerprint sensor adapted to scan a fingerprint of a user of said electronic data storage medium and to generate fingerprint scan data;

an input/output interface circuit activable so as to establish communication with the data terminal; and

15 a processing unit connected to said memory device, said fingerprint sensor and said input/output interface circuit, said processing unit being operable selectively in

20 a programming mode, where said processing unit activates said input/output interface circuit to receive the data file and the fingerprint reference data from the data terminal, and to store the data file and the fingerprint reference data in said memory device, and

25 a data retrieving mode, where said processing unit receives the fingerprint scan data from said fingerprint sensor, compares the fingerprint scan data with the fingerprint reference data in said memory

device to verify if the user of said electronic data storage medium is authorized to access the data file stored in said memory device, and activates said input/output interface circuit to transmit the data file to the data terminal upon verifying that the user of said electronic data storage medium is authorized to access the data file stored in said memory device.

2. The electronic data storage medium of Claim 1, further comprising a card body on which said memory device, said fingerprint sensor, said input/output interface circuit and said processing unit are mounted.

3. The electronic data storage medium of Claim 2, further comprising a power source mounted on said card body and connected to said processing unit for supplying electrical power thereto.

4. The electronic data storage medium of Claim 1, wherein said memory device is a flash memory device.

5. The electronic data storage medium of Claim 1, wherein said processing unit stores the data file and the fingerprint reference data in said memory device in a compressed format.

6. The electronic data storage medium of Claim 1, further comprising a function key set connected to said processing unit and operable so as to initiate operation of said processing unit in a selected one of the programming and data retrieving modes.

7. The electronic data storage medium of Claim 1,

wherein said processing unit is further operable selectively in a data resetting mode, where the data file and the fingerprint reference data are erased from said memory device.

5 8. The electronic data storage medium of Claim of 7, further comprising a function key set connected to said processing unit and operable so as to initiate operation of said processing unit in a selected one of the programming, data retrieving and data resetting modes.

10 9. The electronic data storage medium of Claim 8, wherein said memory device further stores a reference password therein, said function key set being operable to provide an input password to said processing unit, said processing unit comparing the input password with the reference password and initiating operation in the data resetting mode upon verifying that the input password corresponds with the reference password.

15 10. The electronic data storage medium of Claim 7, wherein said processing unit automatically initiates operation in the data resetting mode upon detecting that a preset time period has elapsed since storage of the data file and the fingerprint reference data in said memory device.

20 11. The electronic data storage medium of Claim 1, further comprising a display unit connected to and controlled by said processing unit for showing the data

file exchanged with the data terminal thereon.

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**ABSTRACT OF THE DISCLOSURE**

An electronic data storage medium is adapted to be accessed by a data terminal, and includes a processing unit connected to a memory device that stores a data file and fingerprint reference data obtained by scanning a fingerprint of a person authorized to access the data file, a fingerprint sensor adapted to scan a fingerprint of a user of the electronic data storage medium and to generate fingerprint scan data, and an input-output interface circuit activable so as to establish communication with the data terminal. The processing unit is operable selectively in a programming mode, where the processing unit activates the input/output interface circuit to receive the data file and the fingerprint reference data from the data terminal, and to store the data file and the fingerprint reference data in the memory device, and a data retrieving mode, where the processing unit receives the fingerprint scan data from the fingerprint sensor, compares the fingerprint scan data with the fingerprint reference data to verify if the user of the electronic data storage medium is authorized to access the data file stored in the memory device, and activates the input/output interface circuit to transmit the data file to the data terminal upon verifying that the user of the electronic data storage medium is authorized to access the data file stored in the memory device.

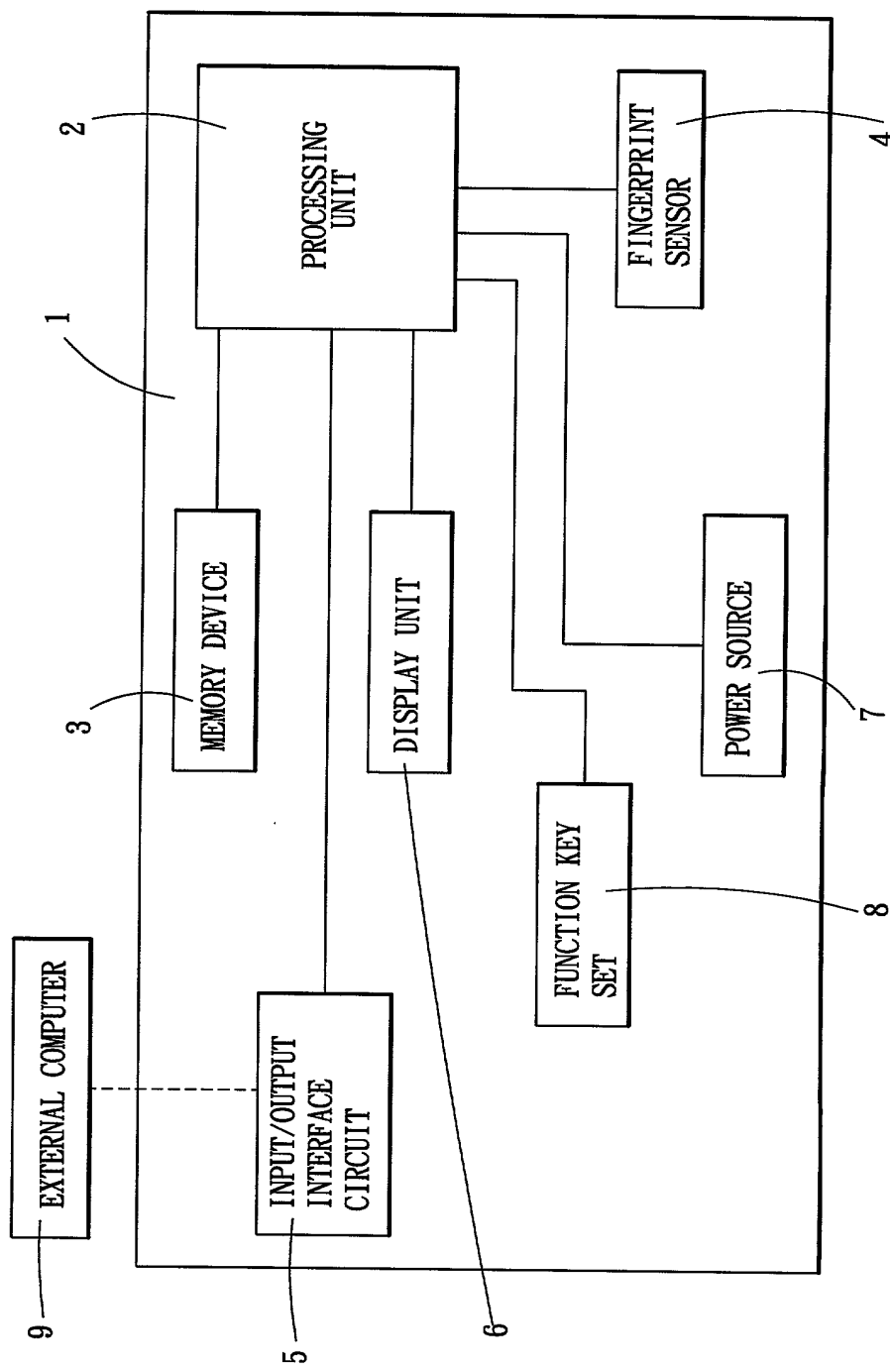


FIG.1

# Declaration and Power of Attorney For Patent Application

專利申請聲明及委任狀

## Chinese Language Declaration

如下所述發明者，我在此宣告：

我的地址，郵局地址和國籍身份都列在我的姓名下：

我相信我是原創的，第一個和單獨的發明者（若只列出一人姓名）或是原創的，第一個和共同的發明者（若列出一人以上姓名）。我要求的主題及申請的專利是關於發明

其說明書：

（註明一項）

☐ 隨同附上

☐ 於 \_\_\_\_\_ 提出申請

申請順次號碼 \_\_\_\_\_

於 \_\_\_\_\_ 提出修正

（如適用於此）

我在此陳述我已經再次查看並明瞭以上所指的說明書的內容，包括上述的要求及修正。

我，按照聯邦規則法典第三十七冊第一、五六條（甲）的條文，認知我提供與審查此申請書有關的重要資料的義務。

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

ELECTRONIC DATA STORAGE MEDIUM WITH

FINGERPRINT VERIFICATION CAPABILITY

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on \_\_\_\_\_ as

Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

## Chinese Language Declaration

我，按照聯邦法典第三十五冊第一一九條的條文，依據下列外國專利申請書或發明者證明申請書在此要求受益優先權，並指出任何上述要求優先權所依據的外國專利申請書或發明者證明申請書其申請日在本申請書的申請日之前。

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

先前外國申請：

Prior Foreign Application(s)  
88217720

Taiwan

19/Oct./1999

優先權要求

Priority Claimed

☒ ☐

是 否  
Yes No

☐ ☐

是 否  
Yes No

☐ ☐

是 否  
Yes No

(號碼)  
(Number)

(國名)  
(Country)

(申請日/月/年)  
(Day/Month/Year Filed)

(號碼)  
(Number)

(國名)  
(Country)

(申請日/月/年)  
(Day/Month/Year Filed)

(號碼)  
(Number)

(國名)  
(Country)

(申請日/月/年)  
(Day/Month/Year Filed)

我，按照聯邦法典第三十五冊第一二〇條的條文，依據下列的美國申請書要求受益。至於其中每個要求的主題未曾依聯邦法典第三十五冊第一二二條的條文在先前的申請書中透露的，而發生在先前申請書的申請日和本申請書的國家或國際申請書的申請日之間的，我，依聯邦規則法典第三十七冊第一五六條(甲)的條文，認知提供重要資料的義務。

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(申請順次號碼)

(Filing Date)

(申請日期)

(狀況)

(已專利、申請中)

(Status)  
(patented, pending,  
abandoned)

(Application Serial No.)

(申請順次號碼)

(Filing Date)

(申請日期)

(狀況)

(已專利、申請中)

(Status)  
(patented, pending,  
abandoned)

我在此聲明所有就我自己知識之下所做的一切陳述均屬真實的，而且依資料和信念所做的一切陳述也相信均是真實的。還有我了解，根據聯邦法典第十八冊第一一〇一節的規定，有企圖不實或類似的聲明時，應受罰款或監禁的，或兩項同時的處分。像這些企圖不實的聲明會危害到本申請書的合法性或危害到任何專利之批准。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

# Chinese Language Declaration

## 委託書：

以列名發明者的身份，我在此指定下列律師和/或代理人執行此申請並從事與專利商標公署有關的所有業務(列出姓名和註冊號碼)：

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agents(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Please see attachment

## 回信請寄：

Send Correspondence to:  
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## 直接電話(姓名及電話號碼)

Direct Telephone Calls to: (name and telephone number)

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第一個或唯一的發明者全名	Full name of sole or first inventor Ming-Shiang SHEN
發明者簽字 日期	Inventor's signature Date <i>Ming Shiang</i> Dec. 24, 1999
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第二個共同發明者全名(如有)	Full name of second joint inventor, if any
第二個發明者簽字 日期	Second Inventor's signature Date
地址	Residence
國籍	Citizenship
郵局地址	Post Office Address

(第三個和其他共同發明者需提供同樣資料和簽字。) (Supply similar information and signature for third and subsequent joint inventors.)

ATTACHMENT

Granger Cook, Jr.	Reg. No. 18,283
Gary W. McFarron	Reg. No. 27,357
Stephen B. Heller	Reg. No. 30,181
Andrew G. Kolomayets	Reg. No. 33,723
Mark J. Murphy	Reg. No. 34,225
John R. Lagowski	Reg. No. 41,922

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